OPERANT CONDITIONING

Behaviors such as walking, talking, eating, drinking, working, and playing do not occur automatically in response to any particular stimulus. In the presence of a stimulus such as food, an animal might eat or it might not, depending on the time of day, the time since its last meal, the presence of other animals, and so on. Because it appears that the animal can choose whether to engage in behaviours of this type, people sometimes call them “voluntary” behaviours and contrast them with the “involuntary” behaviours that are part of unconditioned and conditioned reflexes. Some learning theorists state that whereas classical conditioning is limited to involuntary behaviours, operant conditioning influences our voluntary behaviours. The term voluntary may not be the best term to use because it is difficult to define in a precise, scientific way, but whatever we call nonreflexive behaviours, this chapter should make one thing clear: Just because there is no obvious stimulus preceding a behaviour, this does not mean that the behaviour is unpredictable. The extensive research on operant conditioning might be described as an effort to discover general principles that can predict what nonreflexive behaviours an individual will perform and under what conditions.

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CONCEPTS AND PROCEDURES

Origins of operant behaviour: operant variability

- Operant behaviour is said to be "emitted"; that is, initially it is not elicited by any particular stimulus. Thus one may ask why it happens in the first place.
- The answer to this question is like Darwin's answer to the question of the origin of a "new" bodily structure, namely, variation and selection. Similarly, the behaviour of an individual varies from moment to moment, in such aspects as the specific motions involved, the amount of force applied, or the timing of the response.

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- Variations that lead to reinforcement are strengthened, and if reinforcement is consistent, the behaviour tends to remain stable. However, behavioral variability can itself be altered through the manipulation of certain variables.

Modifying operant behaviour: reinforcement and shaping

Reinforcement and punishment are the core tools through which operant behaviour is modified. These terms are defined by their effect on behaviour. Either may be positive or negative, as described below.

1. Positive Reinforcement and Negative Reinforcement increase the probability of a behaviour while Positive Punishment and Negative Punishment reduce the probability of a behaviour that it follows.

There is an additional procedure

1. **Extinction** occurs when a previously reinforced behaviour is no longer reinforced with either positive or negative reinforcement. During extinction the behaviour becomes less probable. Thus, there are a total of five basic consequences -

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- **Positive reinforcement (reinforcement):** This occurs when a behaviour (response) is rewarding or the behaviour is followed by another stimulus that is rewarding, increasing the frequency of that behaviour. For example, if a rat in a Skinner box gets food when it presses a lever, its rate of pressing will go up. This procedure is usually called simply *reinforcement.*
- **Negative reinforcement (escape):** This occurs when a behaviour (response) is followed by the removal of an aversive stimulus, thereby increasing that behaviour's frequency. In the Skinner box experiment, the aversive stimulus might be a loud noise continuously sounding inside the box; negative reinforcement would happen when the rat presses a lever, turning off the noise.
- **Positive punishment:** (also referred to as "punishment by contingent stimulation") This occurs when a behaviour (response) is followed by an aversive stimulus, such as pain from a spanking, which results in a decrease in that behaviour. *Positive punishment is a* rather confusing term, and usually the procedure is simply called "punishment. “

- **Negative punishment (penalty) (also called "Punishment by contingent withdrawal"):** Occurs when a behaviour (response) is followed by the removal of a stimulus, such as taking away a child's toy following an undesired behaviour, resulting in a decrease in that behaviour.
- **Extinction:** This occurs when a behaviour (response) that had previously been reinforced is no longer effective. For example, a rat is first given food many times for lever presses. Then, in "extinction", no food is given. Typically, the rat continues to press more and more slowly and eventually stops, at which time lever pressing is said to be "extinguished."

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